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## LIPAT - A COMPACT BEDROOM FURNITURE FOR TENANTS IN MALAYSIA

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### ABSTRACT

Among the challenges faced by renting tenants in Malaysia is having to move heavy furniture at the end of the rental period, from one house to another. Easy-to-handle furniture is needed in the assembling and reassembling activity during the moving in and out of the house. This research aims to develop compact bedroom furniture for tenants in Malaysia. There are two (2) main objectives for this study which are; 1) to identify the existing design elements of bedroom furniture and 2) to determine the user design preferences for compact bedroom furniture. Two (2) data collection methods were used: a line-up study and a survey questionnaire. From the analysis, it is found that portable concept furniture can help to ease the issue faced by the tenant during their moving in and out.

A simple mechanism such as slotting and folding a minimalist style of nomad furniture is most appropriate. Wood is widely used for many compact furniture because of its durability and portability concept. The furniture needs to comply with the Malaysian population's anthropometric data and should also be affordable. More studies and ideas for nomad furniture are required not only for commercialisation but also for ease of people's lifestyle.

**Keywords:** *Compact bedroom furniture, minimalist design, nomad, tenants, Malaysia*

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### RESEARCH INTRODUCTION

Mobility is the ability to move oneself independently or using assistive devices or transportation within environments that expand from one's home to the neighbourhood and regions beyond. Webber & Porter(2010) states, "mobility within and beyond one's home has frequently defined and measured in terms of life-space". Most mobility products are designed to help people move around quickly and easily. In the domestic furniture market, the demand for low-cost yet quality furniture increases, especially with the rising living cost and an uncertain economic situation (Shirai, 2015). According to the Department of Statistics census (2019), there are approximately 9.4 million young millennials in Malaysia whose spending lifestyle is towards impulse-buying behaviour and beyond their means. Supported by financial option such as easy access to personal loans and credit card financing, this category of consumers usually looks for instant gratification and seamless online purchasing (Fatimah Zainal, 2019). Satisfying the users' demands for the millennial's category can be quite challenging. The user usually prioritised furniture items that make their lives easier and more enjoyable and only make practical purchases that represent good value.

Many unwanted furniture is thrown away, either dumped by the roadside, in parks, or at random open spaces (Christina Low, 2019). When faced with the prospect of moving into a new property, existing furniture needs to be taken along or leave for the next tenant. The bedroom furniture set can be clarified as essential furniture for the consumers as the bedroom is where people sleep and store their belongings. In the market today, many furniture is designed to be easily assembled and transported. However, the furniture's size and the time taken to reassemble all the furniture might be burdensome to some people when they want to move to another place, especially if the house is on the upper floors. The issue needs to be resolved as the existing product is usually big, heavy and very costly.

### RESEARCH AIM AND OBJECTIVES

This study aims to develop a design model for compact bedroom furniture for tenants in Malaysia. There are two (2) main research objectives: (1) To identify the existing line-up of compact furniture for the bedroom and 2) To determine the user design preferences for compact bedroom furniture.

### RESEARCH METHOD

Two (2) methods to collect the data, namely the line-up study and survey questionnaire, were used. Under the line-up study, ten samples of existing products were selected to study the existing products' design requirements. A survey to determine the users' design preferences towards compact bedroom furniture was conducted. The questionnaire survey was distributed to 40 people aged between 25 to 45 years old. The respondents are the current tenants who live in furnished houses.

Data of user preferences towards design requirements like materials, features, mechanisms, and design preferences were acquired in this survey.



Figure 1: LIPAT – A compact bedroom furniture for tenants

# RESEARCH ANALYSIS & FINDINGS

## Line Up Analysis

Table 1: Line up study

PRODUCT NAME	MATERIAL / MEASUREMENT	FEATURES	MECHANISM/JOINERY/ DESIGNER
 <p>Source: Eba, 2013 <a href="https://likemylace.wordpress.com">https://likemylace.wordpress.com</a></p>	Corrugated Cardboard  Dimension: W: 90cm L: 160cm	The bed frame can be folded for mobility purposes.	Zigzag profile or structure.  Design by: Stanislas Zimmermann, Valérie Jomini
 <p>Source: Emilia Robin, 2013 <a href="https://www.trendhunter.com/trends/carry-home-project">https://www.trendhunter.com/trends/carry-home-project</a></p>	Corrugated plastic	The furniture can be folded up into portable shape and size.	Screw.  Design by: Students from the Sejong University in South Korea
 <p>Source: Amber C. Snider, 2016 <a href="https://theculturetrip.com/">https://theculturetrip.com/</a></p>	Leather straps, beechwood slats, and linen pockets  Dimension: Bed: L (200 cm), W (90 cm) Clothes rail: H (200 cm)	Functional lightweight furniture kit packs in a travel bag.	Dowel wooden slot.  Design by: Elena Bompani
 <p>Source: Amber C. Snider, 2016 <a href="https://theultimuretrip.com/">https://theultimuretrip.com/</a></p>	Spruce wood, 100% wool and cotton  Dimension for the compact kit: L: 113 cm W: 28 cm H: 85 cm	Portable furniture for mobility purposes.	Adjustable lid to support the furniture.  Design by: Malessa Studio
 <p>Source: Troy Turner, 2013 <a href="http://Yankodesign.com">Yankodesign.com</a></p>	Wood and metal  Dimension: D: 50 cm W: 99 cm H: 200 cm	It is an all-in-one solution for organizing clothes which can be packed into a compact box.	Basic structure that is easily mounted or unmounted, without screw and glue.  Design by: André Pedrini & Ricardo Freisleben
 <p>Source: Sarah Lonsdale, 2015 <a href="https://us1.camparchive.com/">https://us1.camparchive.com/</a></p>	Wood and upholstery fabric  Upholstery: L: 190cm, W:90 cm	Multifunctional furniture. The lounge chair can transform into backpack, side table can transform into a suitcase, and bedroll can transform into duffel bag.	Folded (fabric)  Design by: Tilly Blue Davie
 <p>Source: Rose Etherington, 2013 <a href="http://Dezeen.com">Dezeen.com</a></p>	Wood	The furniture can be reassembled and packed, where it allows the user to move easily with the seat from one place to another.	A simple traditional joinery, where metal connectors are used as slotting mechanism.  Design by: Jorge Penadés
 <p>Source: John Sun, 2015 <a href="http://ippinka.com">ippinka.com</a></p>	Steel and vinyl straps are used for the frame, while 3D - knitted fabric and cotton are used for the sleeping bag.  Dimension: L: 200 cm, W: 90 cm, H: 70 cm	The furniture has several back pockets to store unused pillows or magazines.	Red rubber straps that fasten it to the structure.  Design by: Stephanie Hornig
 <p>Source: Giugno, 2015 <a href="http://Fontanasri.net">Fontanasri.net</a></p>	Natural waxed maple is used for the bed frame. Natural linen and polyester padding are used for the mattress.  Dimension: L: 190 cm, W: 77 cm	It can be folded into one piece of structure.	Screw Hinges  Design by: Vico Magistretti
 <p>Source: shopkontrast.com</p>	Untreated beechwood is used for the daybed structure. Uncoloured natural linen is used for the pillow cover.  Dimension: L: 205 cm, W:76 cm, D: 35 cm	It is light and portable. The daybed is suitable for a guest bed or for lounging both indoors and outdoors.	Requires no tools or screws to assemble / dissemble.  Design by: Ole Gjerløv-Knudsen

Table 1 shows the line-up analysis using ten (10) samples of bedroom furniture. In this analysis, the identification of the bedroom furniture was based on their name, material/measurement, physical features, and mechanism/joinery/designer. The material used for the furniture's samples is wood due to its strength, durability, and stability. The features of the samples are portable, easy to carry, and easy to assemble. Most of the furniture sizes are suitable for Asian anthropometric data. The common mechanisms used are slotting mechanisms because they require less or no mechanical tools for assembling/reassemble purposes. The dominant style for the furniture is minimalist.

## Survey Questionnaire Analysis

Table 2 shows the overall findings from the survey questionnaire analysis of 40 respondents who have experience in renting a house. The survey covers respondents' background information and design preferences for bedroom furniture. Most of the respondents are females aged between 25-35 years old. These respondent have had experiences in renting un-furnished houses. Most of them prefer to buy individual furniture that can fit specific purposes with at least a minimum of 2 kinds of furniture in their bedrooms - closet and bed, to fulfil their daily lifestyle. Minimal concept of furniture made by mixed material; wood and other materials was the most preferred style due to its versatility; appearance, wood grain, colour, texture, strength, weatherproof qualities and many more. In selecting the furniture, the most important criteria are the furniture's durability in terms of material, structure and affordability during buying activity.

Table 2: Survey Questionnaire Result

Questionnaire's Items	Result analysis
Gender & Age	<ul style="list-style-type: none"> <li>70% of females as respondent</li> <li>93 % of participants are 25 – 35 years old</li> </ul>
Experience on rented house	<ul style="list-style-type: none"> <li>Most of the respondents have experience in a rented house.</li> <li>Most of them have experienced renting an unfurnished home.</li> </ul>
Preference for buying furniture	<ul style="list-style-type: none"> <li>Most respondents would like to buy individual furniture because it is easier for them to use at one time.</li> </ul>
Preference for bedroom Usage	<ul style="list-style-type: none"> <li>Most of the respondents need beds and closets to satisfy their needs. These two pieces of furniture are the most useful in their daily life as the bed is a place to sleep, while the closet is a place to store their personal belongings.</li> </ul>
Preference for style	<ul style="list-style-type: none"> <li>Most respondents choose a minimal concept for furniture with a simple mechanism to assemble yet functional enough for tenants.</li> </ul>
Preference for material	<ul style="list-style-type: none"> <li>Wood is the most preferred material. It is because the wood has a high aesthetic value compared to other materials due to its unique character; wood grain, color and texture, strength and weatherproof, and much more.</li> </ul>
Other criteria	<ul style="list-style-type: none"> <li>Other needed criteria are durability, sustainability, and affordability.</li> </ul>

## Findings from Line-Up and Questionnaire Survey

The research identified that there are four (4) main criteria needed for the bedroom furniture. These include; 1) types of furniture, 2) physical features, 3) material use, and 4) mechanism. Beds and closets are the furniture that the user most prefers to fulfil their daily needs. The dimension for the bed is 200cm-length and 90cm-width, while for closet is 200cm-height. Features for both furniture are foldable, easy to handle, and portable. This kind of furniture will ease the tenants during moving in and out from one house to another house. Mixed materials such as wood and metal are suitable for use because of their durability and can potentially develop the above propose features. Other than that, the combination of wood and metal in furniture can reduce the size and cost of furniture development. Slotting and hinges mechanisms are suitable for foldable and portable features for the furniture (Refer to Table 3). Design development is carried out based on the above findings. This furniture was named *LIPAT* or Fold as a Compact Bedroom Furniture for Tenants in Malaysia.

Table 3: Overall findings from line-up study and survey questionnaire

Research Methodology	Result
Line-up analysis	<ul style="list-style-type: none"> <li>• <b>Types of furniture:</b> closet and bed</li> <li>• <b>Dimension:</b> <ul style="list-style-type: none"> <li>• Bed – 200 cm (Length) x 90 cm (Width)</li> <li>• Closet – 200 cm (height)</li> </ul> </li> <li>• <b>Material:</b> Wood (main material) and metal</li> <li>• <b>Features:</b> Portable, foldable and easy to handle</li> <li>• <b>Mechanisms:</b> Slot and folded (hinges)</li> </ul>
Survey Questionnaire	<ul style="list-style-type: none"> <li>• <b>Types of furniture:</b> closet and bed</li> <li>• <b>Material:</b> Wood</li> <li>• <b>Features:</b> Durable, portable</li> </ul>

## DESIGN DEVELOPMENT

Idea development was the first stage in the design development process for LIPAT furniture. There are three (3) stages in the idea development stage: thumbnail sketch, design proposal, and final design drawing. Manual and 3D sketches were in the idea development stage. LIPAT can also be called minimalist furniture. Wood is the most used material for this furniture. The closet is designed towards an open closet style, while the bed design is more straightforward towards a boxy shape. The designed furniture help minimises space and size for portability purposes (Refer to Figure 2).

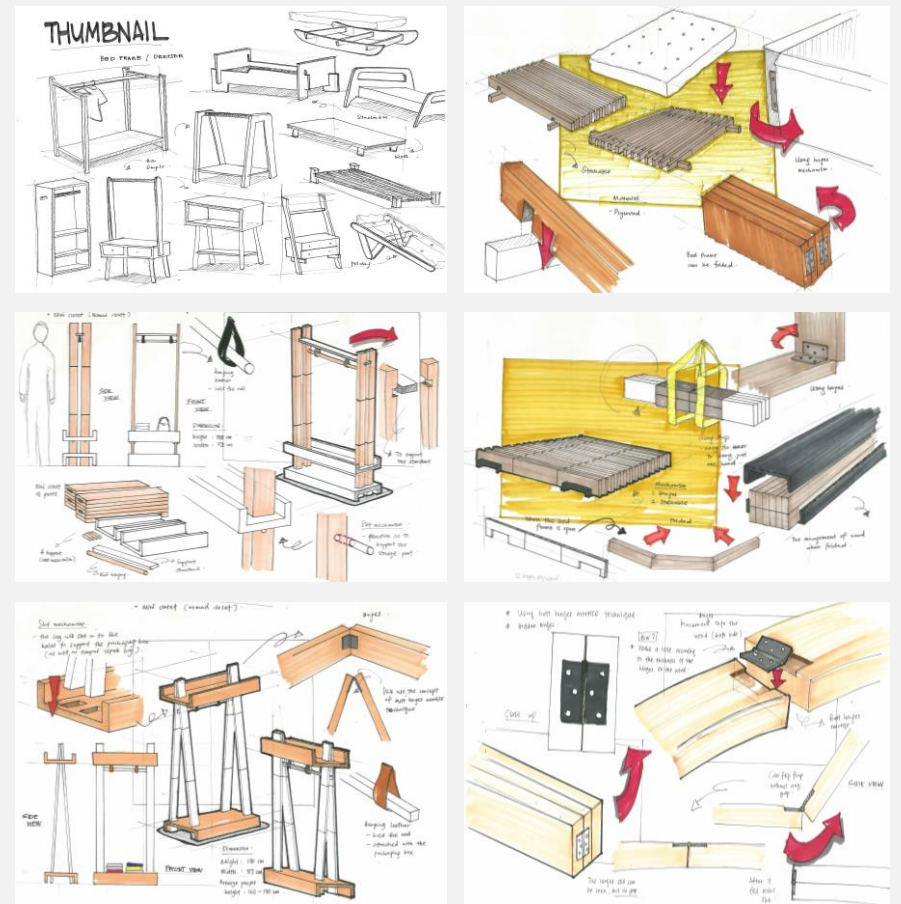


Figure 2: Design development of bed frame and closet; manual sketches and 3D drawing

There are two (2) kinds of colour proposals for LIPAT: brown-white and bluish grey-cream (Figures 3 and 8). The colour combination creates a warm tone that can complement any room colour scheme. The minimalist LIPAT can be folded away, with no additional fixtures or glue, with the use of locking slots and folds to provide structural support to the bed and clothes rail. LIPAT is portable, easy to handle, and foldable to ease the users (Figure 3). LIPAT furniture has a unique form that can save space in the room. The wardrobe or clothes rail of LIPAT is also suitable to store various things such as clothes, books, and other personal items (Figure 4).

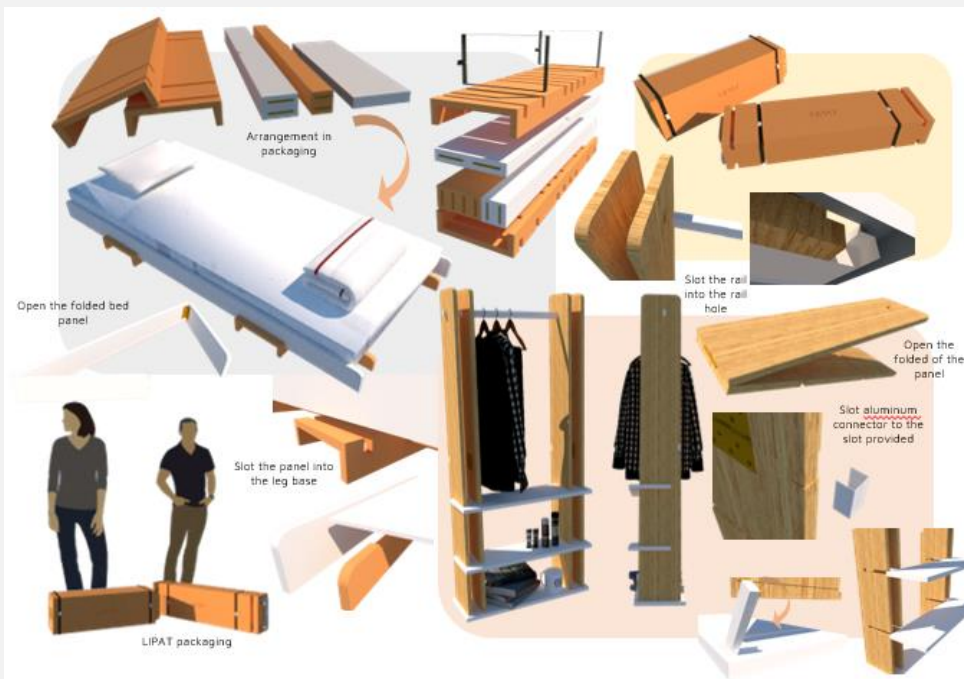


Figure 3: Scenery view of LIPAT and the detailing of it

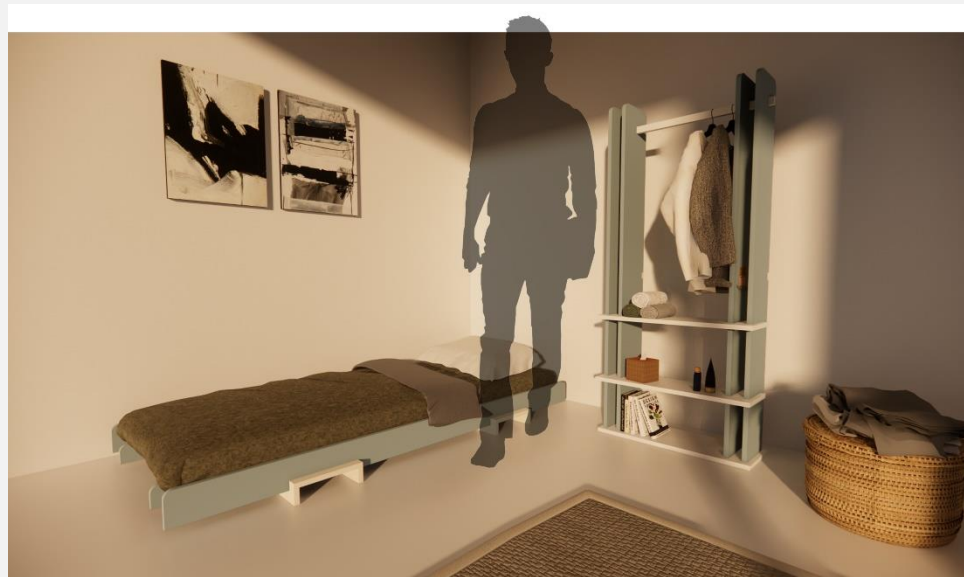


Figure 4: Scenery view of LIPAT

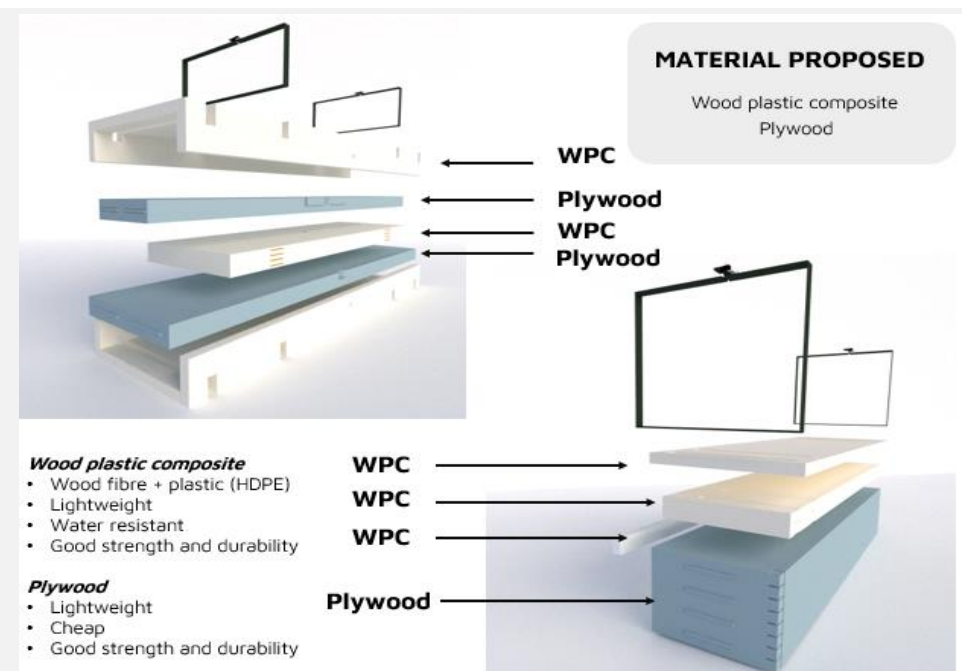


Figure 5: Material proposed for LIPAT

The material proposed for LIPAT is mainly from wood plastic composite (WPC) and plywood. WPC is lightweight and water-resistant, while plywood is lightweight and has high strength and durability. The combination of both types of wood material can create good strength and durability for LIPAT furniture (Figure 5). Figure 6 shows the user manual for LIPAT. There are only three (3) main steps in assembling the LIPAT bed frame, making this furniture easy to assemble. For the clothes rail, there are four (4) main steps to build this furniture. Both LIPAT furniture only takes a couple of minutes with a few steps to assemble as they do not require special tools. As such, LIPAT furniture is suitable for tenants with a nomadic lifestyle.

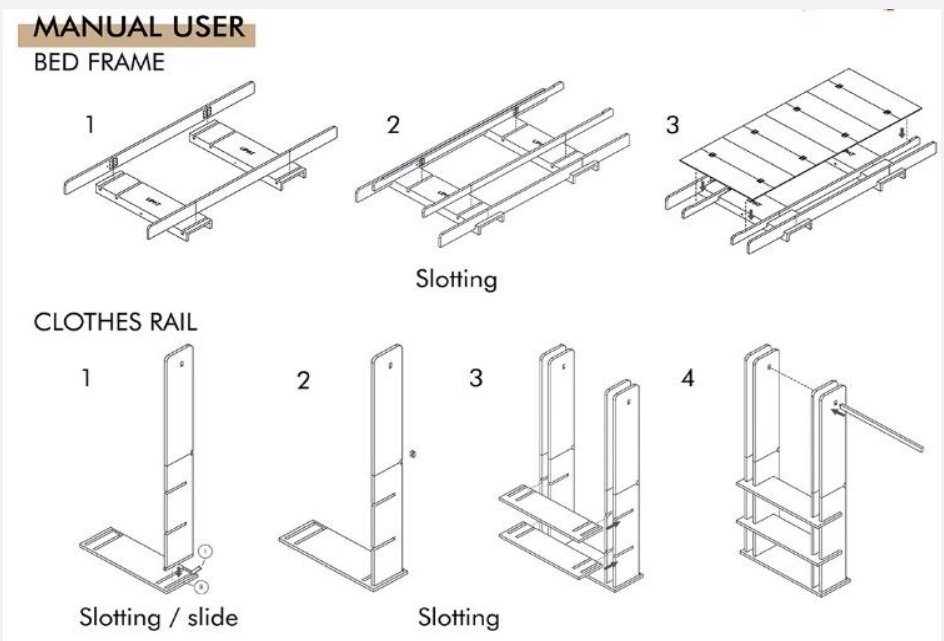


Figure 6: User manual of LIPAT

## CONCLUSION

LIPAT can ease the tenants' issue during moving in and out from one home to another home. There are four (4) criteria from the research findings applied in developing the LIPAT furniture: types of furniture, features, material, and mechanism. The LIPAT is a set of bedroom furniture which consists of a closet and a bed. LIPAT furniture uses a 'minimalist' concept and has a simple design that supports the main features - portable, foldable, easy to handle, can assemble and reassemble. It has a simple structure with a slot and a folding mechanism. LIPAT is also suitable for millennial people who live in a compact space. Compact furniture is also known as space-saving furniture, which helps reduce clutter and makes a compact space tidy. With many positive benefits to the users, LIPAT can be further developed for commercialisation in the future.

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